

## UNITED STATES PATENT OFFICE

2,130,505

POLYAMINO CARBOXYLIC ACIDS AND  
PROCESS OF MAKING SAME

Ferdinand Münz, Frankfort-on-the-Main, Germany, assignor to General Aniline Works, Inc., New York, N. Y., a corporation of Delaware

No Drawing. Original application October 22, 1936, Serial No. 107,020. Divided and this application April 3, 1937, Serial No. 134,737. In Germany October 30, 1935

2 Claims. (Cl. 260—534)

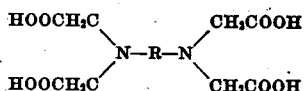
This application is a division of my copending application Ser. No. 107,020, filed October 22, 1936, which relates to the use of amino polycarboxylic acids for avoiding and rendering harmless the precipitates of water-insoluble metal salts, particularly formed owing to the hardness of water.

My present invention relates to polyamino carboxylic acids and a process of making same.

They are obtainable by acting with monochloro acetic acid on a polyamine.

As a polyamine from which the carboxylic acids are derived, there may be mentioned particularly ethylene diamine.

In this manner polyamino-polycarboxylic acids are obtained which correspond to the general formula:



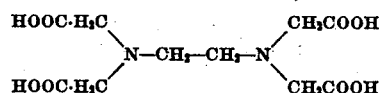
wherein R stands for a lower alkylene radicle.

The following example will further illustrate how the said invention may be carried out in practice, but the invention is not restricted to this example. The parts are by weight.

*Example*

60 parts of ethylene diamine in an aqueous

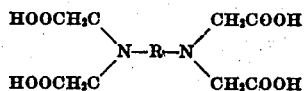
solution of 10% strength are mixed with 466 parts of the sodium salt of monochloroacetic acid and 212 parts of sodium carbonate and the mixture is heated at 90 to 95° C. for 8 to 10 hours. Then 470 parts of a hydrochloric acid of 20° Bé. are added. When cool an acid of the formula:



precipitates, which is scarcely soluble in water and may be recrystallized from water.

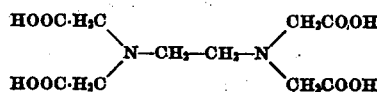
I claim:

1. Polyamino polycarboxylic acids corresponding to the formula:



wherein R stands for a lower alkylene radicle.

2. A polycarboxylic acid of the formula:



which is scarcely soluble in water and may be recrystallized from water.

FERDINAND MÜNZ.